

# CEMGROUT HES

## HEAVY DUTIES, HIGH EARLY STRENGTH NON-SHRINK FLOWABLE CEMENTITIOUS GROUT

### Description

CEMGROUT HES is a single component pre-weighed factory blended Non-shrink, high early strength free flow grout. It is designed for very high early and final strengths. The flow characteristics allow it to use at various consistencies

### Uses

- Precision grouting
- Grouting of base plates of turbines, compressors, boiler feed pumps
- Anchoring for a wide range of fixings.
- Masts, anchor bolts and fence posts.
- Applications requiring high early compressive strengths and high ultimate compressive strengths.

### Advantages

- Excellent flow characteristics
- Low creep characteristics under sustained loading
- High early Compressive, Tensile and Flexural strengths
- Non-shrink and hence ensures complete surface contact and bond
- Suitable for a wide range of loading situations
- Does not shrink or over expand
- Chloride and iron free

### Characteristic

Appearance : Free flow grey powder

W /P Ratio, by weight : 0.13 -0.14(flowable)

Mix Density (Flowable) : 2250 - 2350 Kg/m<sup>3</sup>

Compressive strength (IS4031, Part 6) :

- 12 hrs(30° C Air curing) : > 15 Mpa
- 1 Day(30° C Air curing) : > 40 Mpa
- 3 Days(30° C) : > 60 MPa
- 7 Days(30° C) : > 70 MPa
- 28 Days(30° C) : > 80 MPa
- Flexural Strength(ASTM C78) 28 Days : >12 Mpa
- Free linear Expansion(ASTM C827) : 0.2-2%
- Tensile Strength, N/mm<sup>2</sup> : > 3.5 Mpa

### Expansion Characteristic

Controlled expansion occurs in the unset material to ensure that the grout, when cured, will continue to occupy its original volume within the confines of the voids in which it has placed.

Unrestrained expansion : 1 to 4%

Time of expansion: Starts: 20 minutes Finish: 150 minutes

Pressure to restrain: Approx. 0.004 N/mm<sup>2</sup> plastic expansion

Note : It is necessary to restrain free flow grout edges over 50mm wide. Otherwise unrestrained expansion may

### Standard Compliance

It complies with CRD-C621-83 of the Corps of Engineers (USA) specification, ASTM C827 and C1107.

### Surface Preparation

All areas to be grouted must be clean and free of oil, grease, dirt and contaminants. Remove all loose materials. Concrete must be fully cured a minimum of 28 days. Where required, provide air- relief openings to avoid entrapment of air.

All metal components to be in contact with CEMGROUT HES must be free of rust, paint, or oils.

All concrete to come in contact with the grout must be thoroughly saturated with clean water for a minimum of 12 hours before placement of grout. Remove excess water from holes and voids just before grout placement.

### Pre-soaking

Several hours prior to placing, the concrete substrates should be saturated with clean water. Immediately before grouting takes place any free water should be removed with particular care being taken to blow out all bolt holes and pockets.

### Base plate

It is essential that this is clean and free from oil, grease or scale. Air pressure relief holes should be provided to allow venting of any isolated high spots.

### Levelling Shims

If these are to be removed after the grout has hardened, they should be treated with a thin layer of grease.

### Formwork

The formwork should be constructed to be leakproof. This can be achieved by using foam rubber strip or mastic sealant beneath the constructed formwork and between joints. In some cases it is practical to use a sacrificial semi-dry sand and cement formwork. The formwork should include outlets for pre-soaking.

### Unrestrained surface area

This must be kept to a minimum. Generally the gap width between the perimeter formwork and the plate edge should not exceed 150mm on the pouring side and 50mm on the opposite side. It is advisable, where practical, to have no gap at the flanksides.

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### Mixing

Precondition CEMGROUT HES to  $27 \pm 3^{\circ}\text{C}$  before mixing. CEMGROUT HES is ready to use and requires only the addition of water. Use the minimum water required to achieve the desired placement consistency, approximately the following amounts  
For Flowable Mix - 3.9 - 4.8 ltr. Water to 30 kg.  
For Plastic Mix - 3.45 - 3.9 ltr. Water to 30 kg.  
For Dry-pack Mix - 3.00 - 3.45 ltr. Water to 30 kg.  
The water requirement may vary with mixing efficiency, temperature, and other variables. It is advisable to carry out a trial mix to access any adjustment necessary in the water demand before commencing large scale application.

Mechanical mixing is a must. For a large batch, use a concrete mixer and for a small batch (up to two bags at a time), use a heavy-duty, slow speed (approx. 600 rpm) drill fitted with a spiral paddle.

Place approximately 80% of the water in the mixer. Keeping the mixer running, add CEMGROUT HES slowly. Mix for at least 3 minutes until a lump-free mixture is obtained. Add the remaining water while continuing to mix for at least 5 minutes until the desired consistency is achieved. Use 7-9 mm screen, to remove any unmixed lumps.

### Placing

Placing should be without interruptions until completion. Place the mixed grout into the pouring hopper of the formwork within 15 minutes after mixing. Place from one side only.

CEMGROUT HES should be laid at a minimum thickness of 25mm and to a maximum depth of 100mm.

For grouting beyond 100 mm in depth, extend CEMGROUT HES with up to 30kg of 5-12 mm sized, washed, saturated surface-dry (SSD), graded, low absorption, high density aggregates.

Please consult our local FIRSTCHOICE SPECIALITY CHEMICALS PVT. LTD. representative for advice. Unrestrained Surfaces It is advisable to design the grout casting, maintaining minimum exposed, unrestrained

### Curing

50mm, dress them with 10mm size aggregates to minimise any surface cracking, once grout attains initial set.

### Coverage

1950-2075 Kg. of CEMGROUT HES/m<sup>3</sup>

### Packing

30 kg HDPE bag.

Cure the exposed grout shoulders as soon as the grout reaches touch hard state, for 2-3 days by water ponding and then with a uniform coat of curing compound

### Storage & shelf life

Store under cover, out of direct sunlight and protect from extremes of temperature. In tropical climates the product must be stored in an air-conditioned environment. Shelf life is 12 months when stored as above.

### Cleaning of Tools

Clean all tools and application equipment with water immediately

### Note

All Technical Data Sheets are updated on regular basis; it is the user's responsibility, to obtain the most recent issue.

Field services where provided, does not constitute supervisory responsibility, for additional information contact our local FIRSTCHOICE SPECIALITY CHEMICALS representative.

### Disclaimer

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